Division 8

SECTION 08110

STANDARD HOLLOW METAL WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Interior and exterior frames, doors, and glazed assemblies. See Pre-Architectural Program for locations of metal doors.

B. Standard hollow metal includes:
1. All standard hollow metal doors and door frames and cased openings shall be listed in the Standard Hollow Metal Schedule.
2. All standard hollow metal windows and window frames shall be depicted and detailed in the drawings.
3. All standard interior hollow metal window walls, sidelites, and windows.
4. All hollow metal frame anchors, stops, plates, tubes, and angles.
5. All galvanizing and prime painting.
6. Builders hardware as specified, including locking devices, hinges, closers, pulls, mounting hardware, plates, keys and thresholds.

Note: The term "Standard Hollow Metal" refers to detention work "standards" only as described in these documents and as differentiated from security metal, also described herein.

1.02 RELATED SECTIONS

A. Section 04100 – Masonry Mortar: Masonry Grout fill for steel frames.

B. Section 04220 – Concrete Unit Masonry: Prepartion of adjacent work to receive work of this section.

B. Section 08710 – Builders Hardware.

C. Section 08800 – Glazing

1.03 QUALITY ASSURANCE

A. Conform to requirements of ANSI, SDI, and DHI.

B. Provide standard hollow metal work manufactured by a single firm specializing in the production of this type of work, unless otherwise acceptable to the Owner’s Project Manager.

C. All doors conform to ANSI A250.4 – 1994 Level “A” criteria. Certification of Level “A” doors is to be submitted with approval drawings by the distributer.

D. Manufacturers offering products to comply with the requirements for standard hollow metal work include the following:
1. Habersham Metal Products Company.
2. Allied Steel Products.
3. Ceco Corp.
4. Overly Manufacturing Co.
5. Pioneer Industries
6. Trussbuilt, Inc.
7. Firedoor Corporation of Florida.
8. Palmetto Metal Products, Inc.
9. Johnson Fireproof Door Company, Rosemont, IL.
10. Curries Company
11. D & D Specialties, inc., Union, SC.

1.04 SUBMITTALS

A. Manufacturer's Data: For information only, submit 2 copies of manufacturer's data for fabrication and installation instructions.

B. Shop Drawings: Submit shop drawings for the fabrication and installation of standard hollow metal work. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections.

C. Provide a schedule of doors and frames using same reference number for details and openings as those on the contract drawings prepared by Design-Builder.

D. Requirements of Regulatory Agencies:
   1. Labeled Doors and Frames: Where noted or shown on the Drawings, furnish doors and frames bearing the label of Underwriters' Laboratories or Factory Mutual Engineering Corp., indicating the applicable rating and wall opening classification specified; or manufacturer's written certifications that labeled doors and frames were constructed meeting regulatory agencies' requirements.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage.

B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided the finish items are equal in all respects to new work and acceptable to the Owner’s Project Manager; otherwise, remove and replace damaged items as directed.

C. Store doors and frames at the building site in enclosed secure trailers. Place units on a least 4" high wood sills or on floors in a manner that will prevent rust and damage. Avoid the use of non-vented plastic or canvas shelters. Remove any wet cardboard door wrappers immediately. Provide a min. ¼" space between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Hot-Rolled Steel Sheets and Strips: Commercial quality carbon steel, pickled and oiled, complying with ASTM A569 and ASTM A568.

B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A366 and ASTM A 568.

C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A526, with ASTM A525, G90 zinc coating, mill phosphatized.

D. Supports and Anchors: Fabricate of not less than 16 gauge sheet metal. Galvanize after fabrication units to be built into exterior walls, complying with ASTM A153, Class B.

E. Inserts, Bolts, and Fasteners: Manufacturer's standard units, unless noted otherwise herein, except hot-dip galvanized items to be built into exterior walls, complying with ASTM A153 Class C or D as applicable.

F. Shop-Applied Paint: For steel surfaces, use rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

2.02 FABRICATION, GENERAL

A. Fabricate hollow metal units to be rigid, neat in appearance and free of defects, warp or buckle. Accurately form metal to require sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Weld exposed joints continuously, grind, dress and make smooth, flush and invisible. No metallic fill to conceal manufacturing defects

B. Exposed Fasteners: Unless otherwise indicated, provide exposed fasteners, as follows:
   1. At all 16 gauge doors, provide countersunk flat Phillips or Jackson head screws and bolts.
   2. At all 16 gauge doors and 14 gauge frames, provide countersunk flat head "Torx" security machine screws at maximum 8" o.c. and 4" from ends. Install and ship from factory with flat head slotted machine screws. Furnish special screw drivers for use by others to install glass, etc., in the field.

C. Finish Hardware Preparation:
   1. Prepare hollow metal units to receive mortised and concealed finish hardware, including cutouts, reinforcing, drilling, and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115, "Specifications for Door and Frame Preparation for Hardware".
   2. Reinforce hollow metal units to receive surface-applied hardware.
   3. Locate finish hardware as shown on final shop drawings, or if not shown, in accordance with "Recommended Locations for Builder's Hardware", published by National Builders' Hardware Association.

D. Shop Painting:
   1. Clean, treat, and paint exposed surfaces of fabricated hollow metal units, including galvanized surfaces.
   2. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before the application of the shop coat of paint.
   3. Apply pretreatment to cleaned metal surfaces, using cold phosphate solution (SSPC-PT-2), hot phosphate solution (SSPC-PT-4) or basic zinc chromate-vinyl butyral solution (SSPC-PT-3).
   4. Apply shop coat of prime paint within time limits recommended by pretreatment manufacturer. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 2.0 mils.

2.03 DOORS

A. Provide flush design doors 1-3/4" thick, seamless hollow construction, unless otherwise indicated.

B. For single-acting swing doors, bevel both vertical edges 1/8" in 2".

C. Provide sound insulation filler of fiberboard, mineral-wool board, or other approved non-combustible material solidly packed full door height.

D. Reinforce doors with rigid tubular frame where stiles and rails are less than 8" wide. Form tubular frame with 16 gauge steel, welded to outer sheets.

E. Exterior Doors:
   1. Fabricate exterior doors of two outer galvanized, stretcher-leveled steel sheets of 16 gauge. Provide weep hole openings in the bottom of exterior doors.
   2. Reinforce inside of doors with vertical galvanized sheet steel channel-shaped sections or interlocking Z-shaped sections not less than 22 gauge. Space vertical reinforcing 6" o.c. and extend full door heights. Spot-weld at not more than 5" o.c. to both face sheets.
   3. Reinforce tops and bottoms of doors with 16 gauge horizontal steel channels welded continuously to the outer sheets. Close top and bottom edges to provide weather seal, as integral part of door construction or by addition of inverted steel channels.

F. Interior Doors:
   1. Fabricate interior doors of two outer cold-rolled, stretcher-leveled steel sheets,16 gauge.

2. Reinforce face sheets of 16 gauge with vertical, hot-rolled, not less than 22 gauge steel channel-shaped sections or interlocking Z-shaped steel sections. Space vertical reinforcing 6" o.c. and extend full door heights. Spot-weld at not more than 5" o.c. to both face sheets.

G. Reinforce and prepare all doors as follows:
   1. Vertical door edges shall be beveled 1/8" in 2" and internally reinforced full length with 1/8" thick steel channels welded not over 3" on center inside both door faces. Close top and bottom door edges with continuous recessed 10 gauge channels extending the full width of the door and welded 3" on center maximum to both faces and continuously welded to the vertical door edge channels. Top and bottom edges of all doors shall be finished flush. The end channel and flush closer shall be installed to be permanent and nonremovable.
   2. Door edges shall be factory mortised and accurately cut, reinforced, drilled and tapped to receive template hardware specified in accordance with the approved hardware schedule and the hardware manufacturer's recommendations for the proper installation of all hardware and prison equipment.
   3. A reinforced pocket shall be provided in each door to receive mortised locks. The lock shall be protected on each side, by 3/16" thick steel plate welded inside the door faces.
   4. For locks installed through the edge of the door, provide 3/16" thick reinforced seats, drilled and tapped, and set back to the thickness of the face of the lock, securely welded inside the edge channels. Provide lock centering clips on each side of the lock pocket, and the faces of the door cut out as necessary to pass cylinders, knob spindles, etc.

H. Additional Finish Hardware Reinforcement: (Gauge of each door and frame will be as noted in the Door Schedule).
   1. Reinforce doors for required finish hardware, as follows:
      a. Hinges: Steel plate 3/16" thick x 1-½" wide x 6" longer than hinge, secured by not less than 6 spot welds.
      b. Mortise Locksets: See under "reinforcing of all doors".
      c. Flush bolts: 12 gauge steel sheet, secured with not less than 2 spot welds.
      d. Surface-Applied Closers: 12 gauge steel sheet, secured with not less than 6 spot welds.
      e. Push Plates and Bars: 16 gauge steel sheet, (except when through bolts are shown or specified), secured with not less than 2 spot welds.
      f. Surface Panic Devices: 14 gauge sheet steel (except when through bolts are shown or specified), secured with not less than 2 spot welds.

I. Fire labeled doors shall have a mineral fiber core sufficient to obtain a 250 degree F (121 C) temperature rating.

J. Glass lite frames in doors fabricated of not less than 18 ga. Galvanealed steel with attachment screws allowed only on the non-secure side, screws not visible when viewing door lite frame face.

2.04 HOLLOW METAL FRAMES

A. Provide hollow metal frames for doors, windows, window walls, transoms, sidelights, borrowed lights, and other openings, of size and profile as indicated. All such frames shall be 14 gauge for interior and exterior.

B. Fabricate frames of full-welded unit construction, with corners mitered, reinforced, continuously welded full depth and width of frame, unless otherwise indicated.
   1. Knock-down type frames are not acceptable.

C. Form frames of galvanized steel sheets for exterior, and either cold or hot-rolled sheet steel for interior.

D. Gauge of door frames will be as scheduled. Unless noted otherwise, frames will be two (2) gauges heavier than door gauge.

E. For openings over 4'-0" wide, increase scheduled thickness by at least two standard gauges.

F. Finish Hardware Reinforcement: Reinforce all frames for required hardware as follows;
   1. Frames shall be mortised, reinforced, drilled and tapped at the factory for templated mortise hardware in accordance with the approved hardware schedules and templates. Where surface mounted hardware is to be applied, frames shall have a factory installed reinforcing plates completely drilled and tapped for installation in the field.
   2. For mortise butts, provide a ¼" x full jamb width x 10" in length reinforcing plate, offset at each hinge location and factory drilled and tapped. Top hinge reinforcement shall be additionally braced by a 3/16" backup angle welded behind the offset reinforcement and to the inside of the frame trim.
   3. Provide 7 gauge reinforcement for strike, flush bolt, closer and surface applied hardware.
   4. Lock or keeper preparation shall be in accordance with the recommendations of manufacturer. Reinforcements shall be not less than 7 gauge thick.
   5. All cutouts and reinforcements shall be protected with 26 gauge pressed steel mortar guards welded in place on the inside of the frame.

G. Mullions and Transom Bars:
   1. Provide closed or tubular mullions and transom bars where indicated. Fasten mullions and transom bars at crossings and to jambs by butt welding. Reinforce joints between frame members with concealed clip angles or sleeves of same metal and thickness as frame.
   2. Head Reinforcing: Where installed in masonry, leave vertical mullions in frames open at the top so they can be filled with grout.

2.05 FRAME ANCHORS

A. Provide jamb anchors for installation in CMU walls. Anchors shall be fabricated by the frame manufacturer, sized and shaped to fit the various frame sections. Shapes shall be open type "T" anchors, 5/16" diameter galvanized wire masonry anchor. Space vertically 4 anchors per 6'-10" jamb, 5 anchors per 7'-4" jamb and one additional anchor for each additional 1'-6".

B. Metal Stud Partitions: Provide steel stud type anchors welded to back of frames. Provide at least 4 anchors for each jamb for frames up to 7'-0" in height;; 5 anchors up to 8'-0" jamb height; one additional anchor for each 24" or fraction thereof over 8'-0" height.

C. Floor Anchors: Provide anchors formed of not less than 12 gauge steel, securely welded at the bottom of each jamb. Weld floor anchor to jamb with at least four (4) spot welds per anchor. Anchors shall have two holes for floor fasteners. All frames shall be provided with steel spreader angles, temporarily attached to the bottom of both jambs, one on each side of the opening to serve as a brace during shipping,handling and installation.

D. Head Anchors: Provide 2 anchors at head of frames exceeding 42" wide for frames mounted in steel stud walls.

E. Head Strut Supports: Provide 3/8" x 2" vertical steel struts extending from top of frame at each jamb to supporting construction above, unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction above. Provide adjustable bolted anchorage to frame jamb members.

F. Structural Reinforcing Members: Provide structural reinforcing members as a part of frame assembly, where indicated at mullions, transoms, or other locations which are to be built into frame.

G. Head Reinforcing: For frames over 4'-0" wide in masonry wall openings, provide continuous steel channel or angle stiffener, not less than 12 gauge for full width of opening, welded to back of frame at head.

H. Spreader Bars: Provide removable spreader bar across bottom of frames, tack welded to jambs and mullions.

I. Rubber Door Silencers: Drill stop to receive three (3) silencers on single-door frames and four (4) silencers on double-door frames. Install plastic plugs to keep holes clear during construction.

J. Plaster Guards: Provide 26 gauge steel plaster guards or dust cover boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware installation.

2.06 GLAZED OPENINGS

A. Glazed openings in frames, where applicable, shall be provided with non-removable stops on the detention side and removable glazing beads opposite. Glazing heads shall be formed steel channel of depths shown on details and of the same gauge as the associated frames. Corners shall be tight fitted butt or mitered.
   1. Glazing beads shall be factory drilled and countersunk for flat or oval head machine screws and shall be secured at the factory with slotted flat head machine screws at 8" o.c. #8-32 countersunk torx type flat head security machine screws and special screwdrivers shall be furnished by the frame manufacturer for use by others to install glass and glazing in the field. Screws shall be located not more than 6" from each end of glazing stop and not more than 8" on center.
   2. Additionally reinforce frame rabbets to engage at least six (6) threads of the stop or bead fastening screws.
   3. Paint stops to provide corrosion resistance on all surfaces including those concealed when stops or beads are in place.
   4. After assembly, all tool marks and surface imperfections shall be dressed smooth by grinding, filling, and sanding if necessary prior to priming.

B. Coordinate width of rabbet between fixed and removable stops with type of glass or panel and type of installation indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify substrate conditons are ready to receive hollow metal work.

B. Verify that opening sizes and tolerances are acceptable.

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3.02 INSTALLATION

A. Install frames in accordance with ANSI/SDI and DHI

B. Set all frames in accordance with SDI 105

C. Install all fire rated frames in accord with requirements of NFPA 80

D. Install sealant as require for airtight and watertight installation.

E. Coordinate installation of windows, and glass and glazing.

F. Coordinate with masonry and gypsum board wall construction for anchor placement.

G. Coordinate installation of frames with installation of hardware and doors.

3.03 ERECTION TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner**.**

3.04 CLEANING

A. Clean work under provisions of Section 01700.

B. Remove protective material from pre-finished surfaces

C. Remove chips, dust and other particles and matter from between glazing.

END OF SECTION

SECTION 08210

WOOD DOORS

PART 1 - GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. NATIONAL WOOD WINDOW & DOOR ASSOCIATION (NWWDA)
1. NWWDA I.S.1-A Architectural Wood Flush Doors
2. NWWDA TM-5 Split Resistance Test
3. NWWDA TM- 7 Cycle - Slam Test
4. NWWDA TM- 8 Hinge Loading Resistance Test

1.02 SUBMITTALS

A. Submit the following in accordance with section entitled 'Submittal Procedures.
1. Manufacturer's Catalog Data
a. Doors
b. Accessories
c. Water-resistant sealer
d. Sample warranty
e. Sound transmission class rating
f. Fire resistance rating
2. Drawings
a. Doors: Submit drawings or catalog data showing each type of door unit. Include descriptive data of head and jamb weather stripping with installation instructions. Drawings and data shall indicate door type and construction, sizes, thickness, methods of assembly, door louvers, and glazing,
3. Test Reports
a. Split resistance – submit report for doors tested in accordance with NWWDA TM-5
b. Cycle-slam – submit report for doors tested in accordance with NWWDA TM-7.
c. Hinge loading resistance – submit test report for doors tested in accordance with NWWDA TM-8.
4. Samples
a. Doors
1) Prior to the delivery of wood doors, submit a sample section of each type of door that shows the stile, rail, veneer, finish, and core construction.
5. Color Selection Samples
a. Submit a minimum of three (3) door finish color samples for selection by the Owner's Program Manager.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver doors to the site in an undamaged condition and protect against damage and dampness.

B. Stack doors flat under cover. Support on blocking, a minimum of 4 inches thick, located at each end and at the midpoint of the door. Store doors in a well-ventilated building so that they will not be exposed to excessive moisture, heat, dryness, direct sunlight, or extreme changes of temperature and humidity.

C. Do not store in a building under construction until concrete, masonry work, and plaster are dry.

D. Replace defective or damaged doors with new ones.

1.04 WARRANTY

A. Warranty shall warrant doors free of defects as set forth in the door manufacturer's standard door warranty.

PART 2 - PRODUCTS

2.01 DOORS

A. Provide specified wood doors as noted in the Pre-Architectural Program or, if not so noted, of the types and sizes appropriate to the installation.

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1. Flush Doors
   a. Flush doors shall conform to NWWDA I.S.1-A.
   b. Stile edge bands of doors to receive natural finish shall be hardwood, compatible with face veneer.
   c. Stile edge bands of doors to be painted shall be mill option specie.
   d. No visible finger joints will be accepted in stile edge bands.
   e. When used, locate finger-joints under hardware.
2. Interior Flush Doors
   a. Provide solid wood core, Type II flush doors conforming to NWWDA I.S.1-A with faces of premium grade natural birch or red oak, rotary cut veneers.

2.02 ACCESSORIES

A. Door Louvers
   1. Fabricate from wood and of sizes indicated.
   2. Louvers shall be of the manufacturer's standard design and shall transmit a minimum of 35 percent free air.
   3. Louvers shall be the sight proof inverted vee slat type.
   4. Mount louvers in the door with flush wood moldings.

B. Door Light Openings
   1. Provide glazed openings with the manufacturer's standard wood moldings except that moldings for doors to receive natural finish shall be of the same specie and color as the face veneers.
   2. Moldings on exterior doors shall have sloped surfaces.
   3. Moldings for flush doors shall be lip type.
   4. Provide glazed openings in fire-rated doors with fire rated frames.
   5. Glazing is specified in Section 08800, "Glazing."

2.03 FABRICATION

A. Quality and Construction
   1. Each door shall bear a stamp, brand, or other identifying mark indicating quality and construction of the door.
   2. Identify the standard on which the construction of the door was based and identify doors having a Type I glue bond.

B. Adhesives and Bonds
   1. NWWDA I.S.1-A. Use Type I bond for exterior doors and Type II bond for interior doors.
   2. Adhesive for doors to receive a natural finish shall be non-staining.

C. Pre-fitting
   1. At the Design-Builder's option, doors may be provided factory pre-fit.
   2. Doors shall be sized and machined at the factory by the door manufacturer in accordance with the standards under which they are produced.
   3. The work shall include sizing, beveling edges, mortising, and drilling for hardware and providing necessary beaded openings for glass and louvers.
   4. Provide the door manufacturer with the necessary hardware samples, and frame and hardware schedules as required to coordinate the work.

D. Finishes
   1. Field Painting
      a. Factory prime or seal doors, and field paint as specified in Section 09900, "Painting."
      b. Color: Provide door finish colors as selected by the Owner's Project Manager from the color selection samples.

F. Water-Resistant Sealer
   1. Provide a water-resistant sealer compatible with the specified finishes as approved and as recommended by the door manufacturer.

2 .04 SOURCE QUALITY CONTROL

A. Stiles of "B" and "C" label fire doors utilizing standard mortise leaf hinges shall meet the following performance criteria:
   1. Split resistance: NWWDA TM-S.
   2. Cycle-slam: NWWDA 214-7.
   3. Hinge loading resistance: NWWDA TM-8

PART 3 - EXECUTION

3.01 INSTALLATION

A. Before installation, seal top and bottom edges of doors with the approved water-resistant sealer.

B. Seal cuts made on the job immediately after cutting using approved water-resistant sealer.

C. Fit, trim, and hang doors with a 1/U inch minimum, 1/8-inch maximum clearance at sides and top, and a 3/16-inch minimum, 1/4-inch maximum clearance over thresholds.

D. Provide 3/8-inch minimum, 7/16-inch maximum clearance at bottom where no threshold occurs.

E. Bevel edges of doors at the rate of 1/8-inch in 2 inches.

F. Door warp shall not exceed 1/4 inch when measured in accordance with NWWDA I.S.1-A.

END OF SECTION

SECTION 08710

BUILDER'S HARDWARE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Work under this section comprises of furnishing and installing hardware specified herein and noted on drawings prepared by the Design-Builder for a complete and operational system, including any electrified hardware components, systems, controls, and hardware for aluminum entrance doors.

B. Items include but may not be limited to the following:
   1. Hinges and Pivots
   2. Flush Bolts
   3. Exit Devices
   4. Locksets and Cylinders
   5. Push Plates - Pulls
   6. Closers
   7. Kick, Mop and Protection Plates
   8. Stops, Wall Bumpers, O.H. Controls
   9. Electrified Hold Open Devices
   10. Thresholds, Gasketing and Door Bottoms
   11. Silencers, Miscellaneous Trim and Accessories
   12. Electrified Hardware Items, Controls and Power Supplies

C. See the Pre-Architectural Program for and references to hardware types, door functions or other requirements.

1.02 REFERENCES

A. NFPA-80-1995 - Standard for Fire Doors and Windows
B. NFPA-101-1994 - Life Safety Code
C. ADA - The Americans with Disabilities Act - Title III - Public Accommodations
D. ANSI-A 117.1-American National Standards Institute - Accessible and Usable Buildings and Facilities
E. ANSI-A156.5-American National Standards Institute - Auxiliary Locks and Associated Products
F. UL - Underwriter's Laboratories
G. WHI - Warnock Hersey International, Division of Inchscape Testing Services
H. State and Local Codes including Authority Having Jurisdiction

1.03 SUBMITTALS

A. See Section 01300 - Administrative Requirements, for submittal procedures.

B. HARDWARE SCHEDULES: Submit copies of schedule in accordance with Division 1, General Requirements. Schedule to be in vertical format, listing each door opening, including: handing of opening, all hardware scheduled for opening or otherwise required to allow for proper function of door opening as intended, and finish of hardware. At doors with door closers or door controls include degree of door opening. The hardware supplier shall furnish schedules within two (2) weeks of date of receipt of purchase order.

C. Submit manufacturer's cut/catalog sheets on all hardware items and any required special mounting instructions with the hardware schedule.

D. Certification of Compliance:

1. Submit any information necessary to indicate compliance to all of these specifications as required.
2. Submit a statement from the manufacturer that electronic hardware and systems being supplied comply with the operational descriptions exactly as specified.

E. Submit any samples necessary as required by the Owner's Project Manager.

F. Templates for finish hardware items to be sent to related door and frame suppliers within three (3) working days of receipt of approved hardware schedule.

1.04 QUALITY ASSURANCE

A. Hardware supplier shall be a qualified direct distributor of the products to be furnished. In addition, the supplier shall have in their regular employment an A.H.C. or person of equivalent experience who will be made available at reasonable times to consult with the Design-Builder or Owner's Project Manager regarding any matters affecting the finish hardware on this project.

B. All hardware used in labeled fire or smoke rated openings to be listed for those types of openings and bear the identifying label or mark indicating U.L. (Underwriter's Laboratories) approved for fire. Exit devices in non-labeled openings to be listed for panic.

C. Pre-Installation Conference for Electronic Hardware: Prior to installation of electronic hardware, arrange conference between supplier, installers and related trades to review materials, procedures and coordinating related work.

1.05 DELIVERY, HANDLING AND PACKAGING

A. Furnish all hardware with each unit clearly marked and numbered in accordance with the hardware schedule. Include door and item number for each.

B. Pack each item complete with all necessary parts and fasteners.

C. Properly wrap and cushion each item to prevent scratches and dents during delivery and storage.

1.06 SEQUENCING AND SCHEDULING

A. Any part of the finish hardware required by the frame or door manufacturers or other suppliers that is needed in order to produce doors or frames is to be sent to those suppliers in a timely manner, so as not to interrupt job progress.

1.07 WARRANTY

A. All finish hardware shall be supplied with a one (1) year warranty against defects in materials and workmanship, commencing with substantial completion of the project. Exit devices shall have a three (3) year warranty. All door closers to have a ten (10) year warranty, except door position switches in concealed closers to have a two (2) year warranty.

B. See Section 01780 - Closeout Submittals, for additional warranty requirements.

PART 2 - PRODUCTS

2..01 SUPPLIERS

A. Substitutions: See Section 01600 - Product requirements

2.02 FASTENERS

A. Furnish all Hinges, Locks, Exit devices, Closers, Flat Goods and weather-strip with Torx Security screws.

B. Furnish with finish hardware all necessary screws, bolts and other fasteners of suitable size and type to anchor the hardware in position for a long life under hard use.

C. Furnish fastenings where necessary with expansion shields, toggle bolts and other anchors required according to the material to which the hardware is to be applied and the recommendations of the hardware manufacturer. All closers and exit devices on labeled wood doors shall be thru-bolted if required by the door manufacturer. All thresholds shall be fastened with machine screws and anchors. Where specified in the hardware sets, security type fasteners of the type called for are to be supplied.

D. Design of all fastenings shall harmonize with the hardware as to material and finish.

2.03 ENVIRONMENTAL CONCERN FOR PACKAGING

The hardware shipped to the jobsite is to be packaged in biodegradable packs such as paper or cardboard boxes and wrapping. If non-biodegradable packing such as plastic, plastic bags or large amounts of Styrofoam is utilized, then the Contractor will be responsible for the disposal of the non-biodegradable packing to a licensed or authorized collector for recycling of the non-biodegradable packing.

2.04 HINGES

A. All hinges and pivots, including single and double acting types, pocket hinges, electric hinges and continuous aluminum geared hinges to be of one manufacturer as hereafter listed for continuity and consideration of warranty.

B. Unless otherwise specified provide five-knuckle, heavy-duty, button tip, full mortise template type hinges with non-rising loose pins. Provide non-removable pins for out-swinging doors at secured areas or as called for in this specification.

C. Exterior & Interior Door Hinges
   1. Provide all swinging door hinges of solid bronze or stainless steel with non-removable pins. Furnish all exterior hinges with safety studs, or as called for in this specification.

D. Interior Door Hinges- Wrought steel, polished and plated to match specified finish. Furnish three (3) hinges up to 90 inches (2,286) high and one (1) additional hinge for every 30 inches (762) or fraction thereof. Sets shall adjust and furnish as required by this specification.

E. Provide size 4 1/2 inch x 4 1/2 inch for all 1 3/4 inch thick doors up to and including 36 inches wide. Doors over 36 inches wide provide 5 inch x 4 1/2 inch. For doors over 1 3/4 inch thru 2 1/4 inch thick, use 5 inch x 5 inch hinges. Sets shall be adjusted and furnished as required in this specification.

F. Where required to clear trim or permit doors to swing 180 degrees, furnish hinges of sufficient throw.

G. Provide heavy weight hinges on all doors over 36 inches in width. Sets shall be adjusted and furnished as required in this specification.

H. At labeled doors, provide steel or stainless steel, bearing-type hinges. Provide bearing-type hinges for all doors equipped with closers

I. Finishes: At hollow metal doors, hinges are to be 26D or stainless steel at exterior out swinging doors, unless otherwise required.

J. Acceptable Products:

Bommer	Hager	McKinney	
BB5000	BB1279	TA2714	
BB5004	BB1168	T4A3786	
BB5001	BB1191	TA2314	
BB5005	BB1199	T4A3386	
		ICHT386 x PSF	Security Hinges

2.05 LOCKS AND LOCK TRIM

A. All locksets, latchsets, electrified locksets and trim to be of one manufacturer as hereafter listed for continuity of design and consideration of warranty; electrified locksets to be the same series and design as mechanical locksets.

B. Provide metal wrought box strike boxes and curved lip strikes with proper lip length to protect trim of the frame, but not to project more than 1/8 inch (3.2) beyond frame trim or the inactive leaf of a pair of doors.

C. Mechanical mortise locks shall meet ANSI A156.13 Operational Grade 1 requirements where designated mortise locks are to meet or exceed ANSI Security Grade 1 requirements.

1. 12 gage (2.6 mm) steel cap and case for all functions.
2. Furnish 3/4 inch (19 mm), stainless steel, anti-friction latch bolts.
3. One (1) inch (25.4 mm) stainless steel deadbolt with hardened steel roller inserts.
4. Hand of lock is to be easily field reversible without opening the lock body case.
5. All lever trim is to be thru-bolted through the door and lock case.
6. All cylinder collars for mortise locks to be cast.

D. High Security Mortise Locks shall comply with the following:

1. ASTM F1577-95b - Detention locks for swinging doors.
   a. Paragraph 6.2 Level 1 Impact for deadbolt x latchbolt and deadbolt only.
   b. Paragraph 6.2 Level 3 Impact for latchbolt only.
   c. Paragraph 6.4 for Cylinder Cycle.
   d. Paragraph 6.6 for Mechanical Release Force.
   e. Paragraph 6.8 for Mechanical Release Operation Cycle.

2. Meets UL and CUL Standard 10B, Fire Test of Door Assemblies Class A – 3 hour for single doors up to 4’0’ x 10’0” and ASTM F1577-95b Paragraph 6.3
3. Meets UL437 with cylinders.
4. 12 gage (2.6) steel cap and case for all functions with beveled armor front of 1/8” thick hardened carbon steel.
5. Latch bolts shall be one-piece ¾” (19) throw manufactured of cast stainless steel, anti-friction insert.

6. Deadbolt shall be full 1" inch (25.4 mm) throw manufactured of investment cast stainless steel with hardened inserts.
7. The auxiliary dead latch shall be stainless steel and non-handed.
8. Hand of lock is to be easily field reversible without requiring part replacement.
9. All exposed screws are to be Torx security type.
10. To insure proper alignment, all trim, levers or knobs, shall be thru-bolted. The trim shall be interchangeable between rose and escutcheon designs.

E. All hardware functions are to be exactly as listed in the individual hardware sets with no exceptions.

F. Acceptable Products: Sargent specified as an acceptable quality standard.

	AirTeq	Sargent	Schlage
Mortise Lock	9200 Series L Design	8200 Series – WTL Design	L9000 - 06N Design
Mortise Lock (High Security)	9200 Series K Design	9200 Series – KS Design	L9000 - 41N Design
Mortise Deadlocks		4800 Series	L463 Series
Mortise Deadlocks	9200 Series	9100 Series	L9000

G. Finish: 26D (626). If normally not available in 26D, furnish 32D (632).

2.06 CYLINDERS, KEYING SYSTEMS AND KEY CONTROL

A. All keys and key blanks for locks and cylinders shall be protected by one or more utility patents. This protection shall extend at least into the year 2014. All cylinders shall incorporate a mechanism to check for the patented features on the keys.

B. The Key System shall be classified as high security and be able to provide nationwide geographic exclusivity.

C. Factory Representatives shall meet with Design-Builder and Owner to finalize keying requirements and obtain keying instructions in writing as outlined. Cylinders and keys shall be furnished with Schlage patented "Everest Primus" and "Everest Restricted" full size key sections.

D. Provide temporary construction keying system during construction period. Permanent keys will be furnished to the Owner's Representative prior to occupancy. The Owner or Owner's Security Agent will void the operation of the construction keys.

E. Permanent cylinders shall be keyed by Schlage Service Center or factory, combinated in sets or subsets, master keyed or great grand master keyed, as directed by Owner. Permanent keys and cylinders shall be marked with the applicable blind code for identification. These visual key control marks or codes will not include the actual key cuts. Keys and cylinder identification stamping shall be approved by Owner's Security Agent and Owner. Failure to properly comply with these requirements may be cause to require replacement of all or any part of the cylinders and keys involved as deemed necessary at no additional cost to the Owner.

F. Equip locks and cylinders with patent protected, full size cylinders with five nickel silver finger pins. Provide a minimum of six pins with nickel silver bottom pins. Cylinders must allow for multiplex master keying. combinated to Owner's instructions.

G. Supplier shall furnish one key control and management system equivalent to Morse Watchman “Keywatcher” system complete with electronically-monitored “Smart Keys”, “Key-Pro Performance Software”, 40-key “Keywatcher Vault” starter cabinet, and all accessories and other parts necessary for a complete system. In addition, include model numbers, handing, design, and functions of exit devices and door closers. Transmit to the Owner by secure carrier, return receipt requested.

H. Deliver all end user exclusive permanent key blanks and other security keys direct to Owner’s representative from Schlage Lock Service Center or factory by secure courier, return receipt requested. Failure to properly comply with these requirements may be cause to require replacement of all or any part of the cylinders and keys involved as deemed necessary at no additional cost to the Owner.

I. Key Material: Provide manufacturer’s standard embossed keys of nickel silver to ensure durability. Key

Quantity: Furnish keys in the following quantities:

10	each	Temporary construction keys.
5	each	Master keys per master group.
3	each	Change keys per cylinder or keyed alike group.
3	each	Key blanks per cylinder.

J. Acceptable Products: Subject to compliance with requirements, manufacturers offering the products which may be incorporated in the work include: Schlage Lock Company.

2.07 EXIT DEVICES

A. All exit devices and trim, including electrified items, to be of one manufacturer as hereafter listed and in the hardware sets for continuity of design and consideration of warranty; electrified devices and trim to be the same series and design as mechanical devices and trim.

B. Exit Devices to be "UL" listed for life safety. All exit devices for labeled doors shall have "UL" label for "Fire Exit Hardware". All devices mounted on labeled wood doors are to be thru-bolted or per the manufacturer's listing requirements. All devices to conform to NFPA 80 and NFPA 101 requirements.

C. Exit devices shall comply with ANSI Standard 156.3 Grade 1. All exit devices to be heavy duty, with one piece removable covers. The housing shall be manufactured from extruded aluminum with no exposed screws or rivets.

D. The devices shall be “touchpad” (modern) type. The touchpad which shall extend a minimum of 1/2 of the door width, and have hydraulic silencing of touchpad. All metal end caps to be standard with all exit devices

E. All device latch bolts shall be molly-coated and, where used in wide stile rim or vertical rod, devices shall have external deadlocking standard.

F. Device strikes where surface applied shall be roller type and have anti-slip mounting plate.

G. All outside device trim shall be forged brass full escutcheon. Lever trim shall be “breakaway type” with substantial resistance to rotation when locked but allowing vandalized lever to drop to vertical position when 35 ft. lbs. is applied. Returning lever to horizontal position will allow trim to be operational again.

H. All vertical rod devices shall be concealed and have “latch retraction” hold back. Bottom latch shall have 1-1/2” adjustable projection.

I. Device shall be secured to the door with sex bolts and through bolting at both ends. Device

end cap shall be all metal and secured with three screws to truss bracket.

J. Push pad exit devices shall be patterned punched to designate code requirements where required.

K. Where required, Controlled Exit Devices shall be UL listed “Controlled Exit Panic Device” for use on accident hazard or fire exit applications. Devices shall include in the device housing the following features: Request to exit switch, nuisance alarm, remote alarm, relay, key switch, indicator lamp, internal horn, door position input, external inhibit input, fire alarm input and internal auxiliary lock. Device shall meet all requirements for NFPA 101, Special Locking Arrangement.

L. Mullions shall be “keyed removable” type with only a key required for take down. No key or tools shall be required to reinstall. Mullions shall be by the same manufacturer as the exit devices.

M. All exit devices are to be as specified.

N. Devices shall have published three-year warranty.

O. Finish: 26D (626)

P. Acceptable Products:

Precision	Von Duprin
DL-1103 x 17 Series x 1200-16 x 1123-38	99 NL x 990 NL Series

2.08 SURFACE MOUNTED & CONCEALED DOOR CLOSERS

A. All closers for this project to be the product of a single manufacturer for continuity of design and consideration of warranty.

B. All Closers shall have a Ten (10) year warranty and tested by independent testing laboratory for 10,000,000 cycles

C. All closers to be heavy-duty surface and concealed mounted, hydraulic type, high strength Cast iron body with steel piston and full rack and pinion construction.

D. All closers shall be handed and sized at factory to insure proper installation.

E. Closers shall have non-changing hydraulic fluid for temperature range of 120 degrees to -30 degrees F, equal to LCN Liquid "X" fluid.

F. All closers to have tamper resistant, non-critical regulating screw valves for closing speed, latching speed and back check control as a standard feature.

G. All closer covers to be rectangular, full cover type of non-ferrous, non-corrosive material painted to match closer.

H. Arms shall be solid-forged with extra duty knuckled construction; threaded, stamped, or “form break” arms will not be acceptable. Furnish security tract type closers as listed in schedule.

I. Supply appropriate arm assembly for each closer so that closer body and arm are mounted on non-public side of door opening and on the interior side of exterior openings, except where required otherwise in the hardware sets.

J. Provide closers with special application and heavy-duty arms as specified in the hardware sets or as otherwise called for to insure a proper operating, long-lasting opening.

K. Where “stop” is part of arm bracket , use “spring cush” arm mounted at maximum possible swing.

L. All door closers are to be as specified.

M. Finish: Sprayed enamel finish to match other hardware

N. Acceptable Products:

	Concealed/Security	Surface/Security
LCN	2210 Series	4210/4510 Series
Sargent	268 Series	281 Series

2.09 DOOR STOPS AND HOLDERS

A. Door stops are to be furnished for every door leaf. Every door to have either a floor, wall, or an overhead stop. Special arms on door closers do not constitute door stops.

B. Place door stops in such a position that they permit maximum door swing, but do not present a hazard or obstruction. Furnish floor strikes for floor holders of proper height to engage holders of doors.

C. Where Overhead Stops and Holders are specified, or otherwise required for proper door operation, they are to be heavy duty.
   1. Units shall have metal/plated end plugs. No plastic end plugs will be accepted.
   2. Units shall be field convertible from stop to holder by kits.
   3. Units shall have metal slide. No plastic slides will be acceptable.
   4. All stops shall be by same manufacturer.
      Finish: 32D
   5. Acceptable O.H. stops/holders: GJ # 90 Series.

D. Furnish floor and wall stops as listed in hardware sets. Equivalent products as manufactured by Glynn-Johnson (GJ), Ives and Trimco are acceptable.

2.10 PUSH PLATES, DOOR PULLS, AND KICKPLATES

A. All push plates, door pulls, kick plates and other miscellaneous hardware as listed in hardware sets. Equivalent products as manufactured by Glynn-Johnson (GJ), Ives and Trimco are acceptable.

B. Kick plates to be 8 inches high and Mop plates to be 4 inches High, both by 2 inches or 1 inch less than door width (LDW) as specified. They are to be of 16 Gauge 0.050 inches thick bronze, brass, or stainless steel. For doors with louvers or narrow bottom rails, kick plate height to be 1 inch less than the distance from the bottom of the door to the bottom of the louver or glass.

C. Where required armor plates, edge guards and other protective hardware are to be supplied in sizes as scheduled in the hardware sets.

D. Finish: Same as other hardware, except use 32D and 32 (stainless steel) in lieu of 26D and 26 (plated chrome finishes), respectively, where available.

2.11 FLUSH BOLTS AND COORDINATORS

A. Provide Flush bolts with dust-proof strikes as indicated in the individual hardware sets; Glynn-Johnson (GJ), Ives and Trimco products are acceptable. Finish shall match adjacent hardware.

2.12 THRESHOLDS AND GASKETING

A. Provide materials and finishes as listed in hardware sets. Products by National Guard Products, Reese, Pemko are acceptable. All thresholds must be in accordance with the requirements of the ADA and ANSI A117.1.

B. Provide threshold with machine screws and lead anchors. Supply all necessary anchoring devices for weather strip and sound seal.

2.13 DOOR SILENCERS

A. Furnish door silencers at all openings without gasketing. Provide 2 at each pair of doors and 3 for each single door.

PART 3 - EXECUTION

3.01 INSTALLATION OF FINISH HARDWARE

A. Hardware is to be installed by experienced finish hardware installers only.

B. Check hardware against the reviewed hardware schedule upon delivery. Store the hardware in a dry secure location to protect against loss and damage.

C. Install finish hardware in accordance with approved hardware schedule and manufacturers printed instructions. Pre-fit hardware before finish is applied; remove and reinstall after finish is complete and dry. Install and adjust hardware so that parts operate smoothly, close tightly, and do not rattle.

D. Mortise and cutting to be done neatly, and evidence of cutting to be concealed in the finished work.

E. Protect all finish hardware from scratching or other damage.

Finish Hardware Sets

NOTE: The following hardware sets are examples only of an acceptable schedule of finish hardware sets. The Design-Builder is responsible for identifying and scheduling the hardware requirements for every door opening in the facility.

HDWE SET # H1

For use on door(s):

Provide each PR door(s) with the following:

Quantity		Description	Model Number		Finish	Mfr
6	EA	SECURITY HINGE	ICHT386 x PSF	4 ½" x 4 ½"	630	McK
2	EA	FLUSHBOLTS	FB458 – 12"		626	IVE
1	EA	DUSTPROOF STRIKE	DP1		626	IVE
1	EA	MORTISE LOCK	3-36-9204 KS Design		626	SGT
1	EA	MORTISE CYLINDER	AS REQ'D		626	SCH
1	EA	SECURITY CLOSER	4210 or 4510 (as required)		689	LCN
1	EA	FLOOR STOP	650		626	AIRTEQ
2	EA	SILENCERS	SR64		GRY	IVE
1	EA	THRESHOLD	896N x LAR		ALUM	NGP
1	SET	WEATHERSTRIP	130N x LAR		ALUM	NGP
2	EA	DOOR POSITION SWITCH	6200		AL	AIRTEQ

HDWE SET # H2

For use on door(s):

Provide each SGL door(s) with the following:

Quantity		Description	Model Number		Finish	Mfr
3	EA	SECURITY HINGE	ICHT386 X PSF	4 ½" X 4 ½"	630	McK
1	EA	MORTISE DEADLOCK	36-4876		626	SGT
1	EA	MORTISE CYLINDER	AS REQ'D		626	SCH
1	EA	FLUSH DOOR PULL	614		630	AIRTEQ
1	EA	FLOOR STOP	650		626	AIRTEQ
3	EA	SILENCERS	SR64		GRY	IVE
1	EA	DOOR SWEEP	200NA x LAR		ALUM	NGP
1	EA	THRESHOLD	896N x LAR		ALUM	NGP
1	SET	WEATHERSTRIP	130N X LAR		ALUM	NGP
1	EA	DOOR POSITION SWITCH	6200		AL	AIRTEQ

HDWE SET # H3

For use on door(s):

Provide each SGL door(s) with the following:

Quantity		Description	Model Number		Finish	Mfr
3	EA	SECURITY HINGE	ICHT386 x PSF	4 ½" X 4 ½"	630	McK
1	EA	FIRE EXIT DEVICE	99EO-F		626	VON
1	EA	RIM CYLINDER	20-500 series		626	SCH
1	EA	DOOR PULL	NS602		630	NORS
1	EA	SECURITY CLOSER	4210		689	LCN
3	EA	SILENCERS	SR64		GRY	IVE
1	EA	FLOOR STOP	650		626	AIRTEQ
1	EA	DOOR POSITION SWITCH	6200		AL	
100B only						
1	EA	DOOR SWEEP	200NA x LAR		ALUM	
1	EA	THRESHOLD	896N x LAR		ALUM	
	SET	WEATHERSTRIP	130N X LAR		ALUM	

100B does not require a Door Position Switch

HDWE SET # H4

For use on door(s):

Provide each PR door(s) with the following:

Quantity		Description	Model Number		Finish	Mfr
6	EA	SECURITY HINGES	ICHT386 x PSF	4 ½" X 4 ½"	630	MCK
2	EA	FLUSHBOLTS	FB458 – 12"		626	IVE
1	EA	DUSTPROOF STRIKE	DP2		626	IVE
1	EA	MORTISE LOCK	3-36-9204 KS Design		626	SGT
1	EA	MORTISE CYLINDER	AS REQ'D		626	SCH
1	EA	SECURITY CLOSER	4210 OR 4510 (AS REQUIRED)		AL	LCN
2	EA	SILENCERS	SR64		GRY	IVE
1	EA	FLOOR STOP	650		626	AIRTEQ
2	EA	DOOR POSITION SWITCH	6200		628	AIRTEQ

HDWE SET # H5

For use on door(s):

Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	SECURITY HINGE	ICHT386 x PSF 4 ½" x 4 ½"	632	MCK
1	EA	MORTISE LOCK	3-36-9204 KS Design	626	SGT
1	EA	MORTISE CYLINDER	AS REQ'D	626	SCH
1	EA	SECURITY CLOSER	4210 or 4510 (as required)	AL	LCN
1	EA	FLOOR STOP	650	626	AIRTEQ
3	EA	SILENCERS	SR64	GRY	IVE

HDWE SET # H6

For use on door(s):

Provide each SGL door(s) with the following:

Quantity		Description	Model Number	Finish	Mfr
3	EA	SECURITY HINGE	ICHT386 x PSF 4 ½" x 4 ½"	630	MCK
1	EA	MORTISE LOCK	3-36-9104 KS Design	626	SGT
1	EA	SECURITY CLOSER	4210 or 4510 (as required)	AL	LCN
1	EA	FLOOR STOP	650	626	AIRTEQ
3	EA	SILENCERS	SR64	GRY	IVE
1	EA	Door Position Switch	6200	AL	AIRTEQ

END OF SECTION

SECTION 08800

GLAZING

PART 1 - GENERAL

1.01 SUBMITTALS

A. See Section 11192 for Security Glazing types and installation in secure areas.

B. See Section 01300 – Submittals for requirements

C. See Section 01600 – Material and Equipment for requests for substitutions

PART 2 - PRODUCTS

A. Exterior glazing shall be tinted glass.

B. Exterior and interior spandrel glass shall be 1/4 inch thick tempered, non-insulated, custom color.

C. Interior glazing at fire rated areas shall be 1/4 inch thick clear wire glass.

D. Frameless security or safety type mirrors at toilet room areas shall be 1/4 inch thick clear, float glass of mirror glazing quality, with silver coating and protective copper coating. All edges shall be smooth and polished.

E. Glazing system for aluminum doors shall be manufacturer's standard preformed vinyl gasket systems.

PART 3 - EXECUTION

A. Install glazing products in accordance with manufacturer’s requirements, industry standards, and in full accordance with all applicable codes and regulations.

END OF SECTION